indoors; the greater the cold, the worse the overcrowding in the densely-peopled portions of our cities, and hence opportunities for personal infection, which are at their minimum in the hot summer months when doors and windows are open, reach their maximum in the coldest months.

Some diseases find the autumn months especially congenial to their development and spread, and of these the one that merits most attention as the present season advances is enteric fever, or typhoid fever as it is more commonly, but less appropriately, named. So peculiarly is this affection identified with the autumn months that amongst its best-known synonyms the terms autumnal fever or fall fever are well known; and under ordinary circumstances the largest number of attacks occurs in the month of October; November follows next, and then come September and August. Fortunately, as regards enteric fever also, something more than season is needed to favour its appearance and spread. The infection of enteric fever is of all others the one that in our climate can most easily be rendered harmless. For its development it needs that special form of filth which is associated with human excreta, and whether these foul the air of our dwellings by reason of defective means of drainage, or whether they pollute the soil on which we live or from whence we derive our water supplies, it matters little. Wherever the contamination is there is a soil adapted to the reception and cultivation of the infection. In this respect enteric fever resembles cholera, and, if the warnings which have been so widely circulated throughout the country during the past few months with regard to the measures that should be taken with a view to the prevention of the latter disease have not been unheeded by the public and by our sanitary authorities, we should this autumn feel more satisfied than we ever have done that the conditions necessary to the spread of this autumnal fever do not prevail amongst us as they have done heretofore. Scarlet fever, again, often reaches its widest prevalence towards the commencement of the fourth quarter of the year; and respiratory diseases, including pneumonia, which has now come to be regarded as much more frequently a specific pulmonary affection associated with defective local sanitary circumstances than a mere result of cold, as a rule rise steadily in prevalence until about the middle of November, when they again tend to subside.

Seasons and their predisposing influences must necessarily go and come, but they alone do not suffice for the production of the specific infections. As the science of preventive medicine progresses, we may hope that other conditions, as necessary to the development of infection as are the climatic ones, will steadily be removed, and that our sense of security against preventable disease may not be troubled by mere considerations of season. For the moment the indications are to secure that the air in our dwellings, as also our water, milk, and other food supplies, shall be as far as practicable free from the risk of all contaminating influences; to maintain, as regards our homes and our bodies, the utmost procurable cleanliness; and so to clothe ourselves that we shall be able to resist the depressing effects of the damp and cold which are sure to alternate with the finest weather an autumn season can produce.

TROPICAL AGRICULTURE

The Tropical Agriculturist: a Monthly Record of Information for Planters of Coffee, Tea, Cocoa, Cinchona, Indiarubber, Sugar, Tobacco, Cardamoms, Palms, Rice, and other Products suited for Cultivation in the Tropics. Compiled by A. M. and J. Ferguson, of the *Ceylon Observer*. (London: J. Haddon and Co., 3, Bouverie Street, 1882.)

A BULKY volume containing thirteen monthly numbers and occupying more than a thousand pages can hardly fail to contain a large amount of varied and useful information, especially when it deals with such a subject as tropical agriculture. Not only tropical but subtropical regions are laid under tribute, the latter being represented chiefly by Southern Australia, New Zealand, and China, while Ceylon and the various provinces of India receive, as might be expected, the greatest share of attention. There are, moreover, abundant references to several oceanic islands which have within recent years been invested with more or less political interest. Thus of Fiji it is stated that the planters are chiefly concerned in growing sugar-cane, coffee, and cotton, and though it is claimed that the first-named is indigenous, the best kinds of cane grown in the plantations have been introduced. The Sea Island cotton is easily cultivated, but the production has lately fallen off, the quotations being too low to tempt the planter. Tobacco answers well, and it is believed that cocoa, tapioca, ginger, pepper, and all sorts of spices, camphor, and vanilla, might also be profitably grown. Madagascar appears to have bright agricultural prospects before it, as it is admirably adapted to the cultivation of sugar and coffee, and indeed as a sugar-growing country it seems likely that it will before many years leave Mauritius in the background. The small islands between Madagascar and the mainland are enthusiastically spoken of as a new planting region: "situated in a most salubrious climate, between the southern tropic and the line, they are admirably adapted for the cultivation of sugar, coffee, vanilla, cocoa, spices, cloves, and other products, many of which are pure articles of luxury, and will always command a high price in the European market."

Judging from the space allotted to them and the amount of interest that appears to centre round them, the staple crops of tropical agriculture are tea, coffee, cocoa, and sugar; cinchona and tobacco; indiarubber, cotton, and gums, to say nothing of rice. Of the first group, tropical countries may rest fairly securely in the cultivation of tea, coffee, and cocoa, and although the sugar-cane is largely planted in the southern United States and the sugar-beet is so extensively grown in Europe, yet we gather that sugar cultivation is a thriving industry in India, Java, Mauritius, the Malay peninsula, Queensland, Fiji, Brazil, Jamaica, and Trinidad. Cinchona is of course a highly popular subject, and from this volume alone a very large amount of useful information may be gleaned. On account of the rapid development of the electrical industries and of the increasing use of elastic tires for wheels, the demand for indiarubber and guttapercha is continually increasing, and this will no doubt be met by the extended cultivation of these products. The official papers relating to the introduction of the Para and Ceara rubber plants into

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India are reproduced; the original seeds which were obtained in South America were sown at Kew, and the young plants sent thence to the East, but the precarious nature of the undertaking may be inferred from the fact that only about three per cent. of the seeds germinated. It is pleasant to read here and there spontaneous testimony to the value of the Royal Gardens at Kew and of the Indian Botanic Gardens.

Of controversial subjects the coffee leaf disease attracted most notice, considerable space being devoted to the reports and letters of Mr. Marshall Ward, and to the discussions arising therefrom. On p. 15 is a complacent suggestion that as crops cannot always be got from the branches of the coffee tree they might be got in another form from the roots by grinding up the cockchafers that there abound and selling the beetle powder, mixed with a little coffee, as real coffee, carrying on the entire manufacture in Ceylon to prevent any tampering on the part of dishonest middlemen in London! This pleasant notion is based on the assumption that "the British public will consume anything not absolutely dirt that is sufficiently adulterated to suit their palates."

The marked contrast between our home agriculture and that of the tropics is afforded in the very few and scanty references to live stock of any kind. English agriculturists are continually relying more and more on their flocks and herds and less on their corn crops for remunerative returns. There is, indeed, a solitary reference to Aden cattle, which are bred inland, and derive their name only from the port whence they are shipped. They have a high reputation as dairy stock, and have been used with success for crossing with some of the Indian herds on the Government farm at Saidapet, Madras. The only allusion to sheep-farming is to that of Australia.

Of course, in such a volume as the one before us, the matter is necessarily of a very heterogeneous character, but it is all concerned more or less directly either with agriculture itself, or with the economic and industrial aspects of the art as pursued in the hotter regions of the globe. As a record of the experience of tropical planters, of the difficulties and drawbacks of climate and of soil they have to contend with, of the good or indifferent results which have attended their efforts at acclimatisation, of the measures they have adopted to minimise the evil effects of insect or fungal attacks, and not less as an interesting historical summary of the progress of tropical agriculture, such a work as this carried out on the lines on which it has been begun cannot fail to possess a permanent value. Young men especially, who, having learnt something of the art of agriculture in the stern school of British farming, would fain try their skill under a tropical sun, will find collected here a large mass of useful information such as perhaps it would hardly be possible to obtain elsewhere. W. FREAM

OUR BOOK SHELF

Vorlesungen über Pflanzen-physiologie. Von Julius Sachs. (Leipzig: Wilhelm Engelmann, 1882-83.)

THE fourth edition of Prof. Sachs's well-known text-book of botany being nearly exhausted, his friends and publishers urged him to set about the preparation of a new edition; but the revisal necessary for the publication of the fourth edition had been so irksome that nothing would induce the author to attempt the task again. Moreover his views on many important questions concerning the physiology of plants had changed: points once considered all-important had lost much of their importance, and expanded views acquired in the progress of time could not be made to fit into the framework of the old work.

Prof. Sachs for years has been a most successful teacher of botany. His text-book, large and technical though it was, has had a most successful career in German-speaking countries; translated into French by an eminent French botanist, and into English under the auspices of the Delegates of the Clarendon Press at Oxford, there needed no higher testimonies to its worth; still, instead of being content with the success of his volume, he now refuses to look at it, and utterly casts it from him. "As long as the artist is pleased with his work, he can add a touch here and there, or can even go in for greater changes; but this is not sufficient when the work has ceased to be the expression of his idea, and this is the attitude I stand in with regard to my text-book." This state of mind has resulted in the publication of the fine volume which we now notice; in size and general appearance it differs very little from the author's text-book, but under the style of lectures it appeals to a wider circle of readers than mere college students. Ardently anxious that the very important modern views on plant physiology should be known to all fairly educated people, these lectures, without sacrificing scientific accuracy, are written in a style as free as possible from the fatiguing use of long and purely technical words; they are purposely written too in a slightly dogmatic style, for it is clearly a lecturer's duty to put before his audience his own individual views upon even debated questions; his hearers have a perfect right to know what impresion the general aggregate of scientific facts has made upon his mind, and while this would be out of place in a technical text-book of the science, it harmonises well with a course of lectures.

At the end of each lecture some—we could have wished for more—bibliographical notes are added for the benefit of those readers who wish to plunge deeper into the subject.

The publishers wished that a new revised edition of the systematic part of the text-book should have been "tagged" on to these lectures, but Prof. Sachs declared that he had neither time nor inclination for the task, which he commits to the care of Prof. Gœbel, whose separate treatise on this part of the subject has lately made its appearance. We hope the day may not be far off when these charming lectures on plant physiology will be read in English by a large number of our cultivated public. E. P. W.

Accented Five-figure Logarithms of Numbers from 1 *to* 99999 *without Differences.* Arranged and Accented by L. D'A. Jackson. (London: W. H. Allen, 1883.)

IN this work are comprised two sets of tables. The first set (pp. 1–221) is indicated by the above title-page; the second is entitled "Accented Five-figure Logarithms of Sines, Tangents, Cotangents, and Cosines of Angles from 0° to 90° to every Hundredth of a Degree" (pp. 224–270). There is, further, a one-page "Comparison of French and English Decimal Scientific Systems at 32° and 39° Fahrenheit in vacuo." The possessors of the same author's "Accented Four-figure Logarithms" are already acquainted with his principles of accentuation; to those who have not this work we need only say that *excess* and *defect* are clearly indicated in the printing, and that the degree of accuracy attainable in any piece of calculation is very rarely inferior to that reached by the longer calculations with the ordinary seven-figure tables. The logarithm of any number is seen at a glance, so that there

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